Mrs Gray
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# EDINBURGH CRYSTAL

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DESIGN

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## CRAFTSMANSHIP IN GLASSMAKING

No Smoking allow

# QUALITY FIRST

*A group of hand-made crystal pieces, which show how faithful our designs are to the classical standards of elegance*

THIS IS OUR SIGN AND GUARANTEE OF QUALITY

EDINBURGH E&L CRYSTAL

IT IS INDELIBLY MARKED ON EVERY CUT PIECE

# CRAFTSMANSHIP IN GLASSMAKING

## GLASS-MAKING LONG AGO

"The christal glass which glimseth brave and bright" is queer stuff, full of magic and variety; old as the Pyramids, modern as the cocktail. They say glass was made in Egypt nine thousand years ago, in Babylon and Troy, and even in lost Atlantis. For a time the sequestered Venetian craftsmen were the guardians of the secrets of a magnificent and subtle art. It is remarkable that since the invention of the blowpipe the methods and tools of the glass-worker have hardly changed at all, and that the craftsman of to-day inherits his technique almost directly from the skilful glass-workers of Imperial Rome. The brilliant crystal glass containing lead is, however, a distinctly British product, evolved about the beginning of the eighteenth century, and perfected at the present time.

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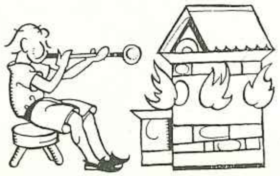
## THE EDINBURGH AND LEITH FLINT GLASS WORKS

In Scotland glass was made at Wemyss, in Fife, in the reign of James VI. The Edinburgh and Leith Flint Glass Works, at Norton Park, were not established quite so long ago, but for more than half a century the table-glass made here has followed the best traditions, and has become world-famous for its excellence.

In 1914 the fine business which had been built up

*James VI.*



*A very early Furnace*

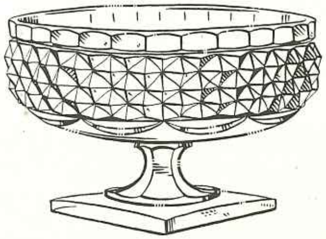
*Line drawings by Helen Monro*

through long years of industrial effort was willingly sacrificed, and the whole energies of the works devoted to the manufacture of electric-light bulbs, glass-tubing, and various kinds of glass apparatus which were urgently needed by the nation. After the war, however, the making of table-glass was resumed. In 1921 the Edinburgh and Leith works were placed under new management and entirely reorganised and brought up to date, and though this step was costly and difficult it has been thoroughly justified by a vast improvement in the quality of our glass, and a gratifying increase in the volume of our trade.

In preparing this booklet we have attempted to give an interesting account of the various processes involved in glass-making, and to make clear just the points which distinguish good glass from inferior makes. The information which this book contains should, we hope, prove useful, as well as entertaining, to any who may be thinking of buying crystal glass-ware.

## THE ELEMENT OF HANDICRAFT

We should like to emphasise the fact that Edinburgh crystal is hand-made. For this reason it is entirely different in character from much glass produced nowadays in great quantities by mechanical means and unskilled or semi-skilled labour. Much of this glass is of foreign manufacture. The men who shape Edinburgh crystal glass are far from being mechanical or semi-skilled workers. Their art is acquired only after long and arduous years of training and experience, and the consummation of deftness and skill is achieved only by men of special ability. It is clear that things made by such men will have a charm



*An Old English Rose-bowl (A43)*

*A fine Georgian Service (H972)*

and sensitiveness of line that is impossible in mechanical manufacture. Hand-made glass has the further advantage of being tougher and more elastic, and therefore more durable, than pressed or machine-made work. Glass-cutting and engraving is also essentially an art. It is all done by hand, and among the men whom we employ are some of the most skilled to be found anywhere.

While we emphasise the fact that our glass is made and decorated by hand, we do not mean to imply that our methods are old-fashioned or excessively conservative. We respect the element of handicraft, but we do not glory in archaic methods. What we have done is to combine the artistic skill of these hand-workers with the latest and most scientific aids to production.

## FURNACES

*Firing*

Since the early days when the glass-workers burned up the beechwoods, glass furnaces have not been economical, and many English glass-houses are still extraordinarily wasteful of fuel. At the Edinburgh and Leith works the old-fashioned furnaces have been replaced by recuperative furnaces of the latest type. Their coal consumption is but one-third of that of the old type of furnace, while they give far better results in founding the glass, and are much more efficient in every way. The furnaces run at a temperature of over 1300° C., and a further efficiency factor is supplied by the pyrometer recording-clocks which accurately record the temperature every minute of the day and night, eliminating all guess-work, and checking the activities of the furnace-men.

## WHAT GLASS IS MADE OF

The main ingredients used in making crystal glass are silver sand, red lead, and potash, in certain proportions. The development of the brilliant and famous British crystal glass was due to successive increases in the proportion of lead, which was originally added in small quantities as a flux. This clear new glass proved to be much more brilliant than any yet made, with a capacity for breaking up light into its constituent parts only equalled by the diamond. In the early days, however, the colour of the glass was extremely liable to variations, due to impurities in the raw materials. Mixing in those days was done by rule of thumb, and chemical analysis was unknown. These variations—as, for example, the blue-grey, which is supposed to be characteristic of Waterford glass—have a certain charm lent by antiquity and rarity, but it was the dearest ambition of the old makers to produce perfect colourless glass, and that ambition can be realised by the progressive modern manufacturer.

*Ladling*

At the Edinburgh and Leith works there are no haphazard or rule-of-thumb methods. All is scientific and exact, and, as a result, the crystal glass we now produce is not only of perfect colour and wonderful brilliancy, but dependably and unvaryingly so. Its composition is scientifically determined. The materials are of the finest and purest, and are sifted and tested with all the care in the world. As the accidental inclusion of an iron nail in a batch of raw material will turn green the whole contents of a 14 cwt. crucible, it is obvious that precautions are necessary.

## THE CRUCIBLES

The sand, lead, and potash, with some broken glass (or "cullet"), are melted together in crucibles or fire-clay pots in the furnace. These pots must be of the finest quality, and we have found it best to manufacture them ourselves, in order to ensure the use of the finest materials, and that care in construction which will give them the longest possible life in the intense heat of the furnace.

*Pot-making*

" *Workman* "

## THE GLASS-HOUSE

The scene presented by the glass-house while the work of glass-making is in progress is full of interest and fascination. Men are engaged in groups round the furnace where the glass is melted, performing, in the glow from the crucibles, the complicated, masterly, and often graceful motions of their craft. Each group is known as a " chair," and consists of four or five persons: the " workman," who is the principal, two who are known as " foot-maker " and " servitor " — though the work of the foot-maker is not necessarily confined to making feet—and one or two boys who are employed in performing minor operations, and carrying finished things away. It is supposed to be the ambition of every boy to become one day a master workman, and at the Edinburgh and Leith works this laudable ambition is encouraged. A certain part of the work is apportioned to each member of the group, according to the design of the article on which the " chair " is engaged.

To begin, a ball of molten glass is gathered from the pot on the end of the blow-iron, which is an iron tube about five feet long. It is continuously rotated in order to distribute the glass evenly. The gathering of glass is next rolled on a polished iron table, called a " marver," to smooth and regularise the surface. The glass-worker now blows through the tube, and the hot glass becomes a hollow sphere, the blow-iron being all the while turned and tilted and swung in a way which almost magically influences the shape which is developing. The glass is further shaped as the iron is rolled up and down on the long arms of the glass-makers' chair. A few very simple tools are used—such as steel pincers, callipers, wooden measuring-sticks, wood clappers, and shears. The stem and foot would now be added, and the object may be transferred for further working to a " pontil," or steel rod, to the end of which it is attached by a blob of hot glass. Remelting is necessary before superfluous glass is sheared away from the rim and the final touch given. The still glowing object is cracked off the rod, dropped into an asbestos-lined tray, and carried swiftly to the annealing oven or " lehr."

" *Marvering* "

*Presto !*

The whole elaborate process is extraordinarily fascinating to watch. One cannot but admire the dexterity and precision with which these remarkable men at one time, perhaps, produce a whole series of wine-glasses exactly to pattern, and, at another, create unique and original shapes of breath-taking beauty.

## ANNEALING

The lehr, or annealing chamber, is a long tunnel down which the glass travels slowly on trays, passing gradually from a high temperature to the coolness of the ordinary atmosphere. This is necessary because if the glass were allowed to cool rapidly it would probably fly into pieces owing to the enormous strains set up in the cooling process. It would certainly not stand much handling, far less cutting. The temperature of the lehrs, like that of the furnaces, is most carefully checked by pyrometer recording-clocks.

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On removal from the lehr each article undergoes a searching examination for flaws and strains. At this stage a scientific instrument is brought into play which reveals by means of polarised light any trace of imperfect annealing. Every piece that is in the least degree imperfect is ruthlessly scrapped, and goes with a crash to swell the store of " cullet."

*To the Lehr*

## GLASS-CUTTING

*Glass Cutters*

The next step is the decoration of the glass by cutting. This is done by holding the glass against the edge of a revolving wheel of iron or stone, precisely in the manner described by the Roman historian, Pliny, with only this difference, that the wheel is turned for the modern cutter by electricity. It sounds a very simple process, but actually it calls for a very high degree of skill. The glass must be cunningly guided to produce some of the lovely and intricate effects that are possible. There is an infinite number of patterns and combinations. Some of these have curious and interesting traditional names, such as "diamonds," "lace diamonds," "hobnails," "splits," "fans," "flutes," "steps," and "stairs." The finest of wheels may cut some hundreds of diamonds to the square inch in a pattern of fairy delicacy, or the design may have a massive architectural simplicity and consist of only a few bold cuts and broad facets. The pattern, which has been indicated on the glass "blank" by specially trained markers, is first roughly cut on an iron wheel fed with water and sand. The next frame carries a Craigleith stone fed with water, which has a much finer abrasive action, and smooths the rough cuts done by the iron wheel. The glass is now ready for polishing.

*The Cutting Wheel*

The aim of cutting is to bring out and enhance the inherent lustre and brilliance of the glass, without obscuring or distorting the essential grace of the underlying form. The eye is attracted and delighted by flecks of captured sunlight, and facets that glint and blaze with imprisoned fire. When suitable cutting is applied with taste and judgment a very beautiful effect is produced. It is of little avail, however, to put fine cutting on inferior glass. It is only necessary to compare a piece of Edinburgh crystal with a piece of foreign glass of inferior composition to see the difference immediately.

## POLISHING

In the old days the process was completed by polishing the glass by means of wood or cork wheels, and brushes used with putty powder. This process was elaborate and slow, and, in addition, unhealthy for the men. A new and scientific acid-polishing department has been installed at the Edinburgh and Leith works. The cut-glass is now finished by being dipped in an acid bath. The effect is almost instantaneous and seems like witchcraft, the crystal attaining a wonderful brilliance which was scarcely possible by the old means.

Every piece now passes through a final searching examination before going into the world.

## DESIGNS

Rooted as our craft of glass-making is in antiquity it is not surprising that we should be alive to the beauty of old designs, many of which have a suavity of line, and a charm and dignity which modern taste must appreciate. In our "Period Reproductions," by following in every essential the original process of manufacture, and by paying meticulous attention to such details as the correct elevation of the foot and the retention of the pontil mark, we have recaptured to an exceptional degree the character of the

*A Searching Examination*

originals. This, however, is only one aspect of our work. We believe not only in carrying on the old and beautiful traditional shapes but in creating new shapes and decorations which shall be in the spirit of our own age and fully in accordance with modern ideas and requirements. This is really the most interesting side of our work, and one which we attack in a spirit of adventure and enthusiasm.

## OUR PRODUCTIONS

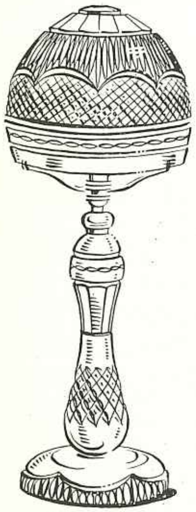
We are mainly engaged in producing services and suites for table use: goblets and glasses in simple, fine, blown shapes, or elaborately cut and engraved, with jugs and decanters to match, finger-bowls and iceplates. There are sets of dishes for sweets and fruit—specially designed grape-fruit dishes and fruit dishes with turned-back rims, that make it easy to play " this day, next day, some time, never!" sandwich sets, consisting of trays of original and useful design, with plates to match; salad bowls; honey jars; biscuit boxes; butter dishes; cream jugs and sugar bowls; salt cellars; eggcups; napkin rings.

Some of our goods are supplied in satin-lined cases, and in this form make very delightful gifts for weddings or other occasions. Cocktail and liqueur sets may be had in this style, and sets of napkin rings, eggcups, iced coffee cups, and salt cellars.

A very attractive liqueur set is made in a distinctively Scottish thistle design. This design, appropriately enough in a Scottish factory, is often used, and is very popular.

Crystal trays and powder bowls, trinket boxes and perfume bottles are delightful and elegant accessories of the dressing-table.

Candlesticks, and the more modern electric-light standards, are also produced in many patterns.



*Lamp (K73)*

We also make ash trays, cigarette boxes and tobacco jars, which are rendered air-tight with a rubber ring.

Many different patterns and styles of bowls and vases for flowers are made. A specially handsome type of boat-shaped bowl lends itself extremely well to the arrangement of flowers. There are also oval bowls and vases, tall trumpet shapes, and a rather fascinating new type of flower-holder, with a wide rim like the lace frame of a Victorian posy. To harmonise with these vases and bowls we make the Edina flower-holder of the same fine crystal glass.

*How not to carry glass!*

The musical ring of our glass suggested the manufacture of glass bells, and these make very charming ornaments, and have a very useful sweet tone.

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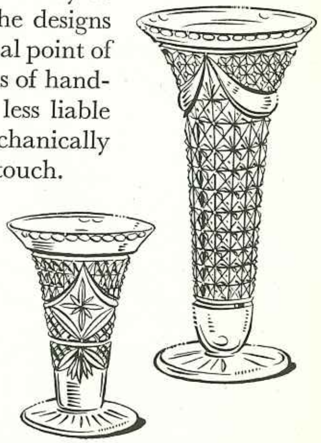
## HOW TO RECOGNISE GOOD GLASS

The best modern cut-crystal glass-ware is brilliant, lustrous and clear, graceful in line, not over ornate, weighty, well balanced, and pleasant to handle, with a clear note that rings as true as a bell. In these respects the quality of Edinburgh crystal is quite unrivalled. The purity of the colour is an important matter. The glass must never be muddy or dull, or have the least trace of green or pink. Imperfect colour may be detected by a glance at the edge of the article, and should be avoided. The workmanship and finish should be perfect, the facets sharp and bright. Mechanically moulded or pressed glass is easy to detect as the edges of the facets are dull and the designs often uninteresting and impossible from a technical point of view. The beautifully rounded and finished rims of hand-made articles should also be noted. They are less liable to chip than the harshly angular rims of mechanically finished glasses, and are more agreeable to the touch.



*Vases (L513 and K339)*

## THE CARE OF CRYSTAL

Glass is much easier to clean and care for than silver, and from this point of view it is the housewife's delight. It should simply be washed in warm water with a little soap, and rubbed with a cloth. A moderately soft brush will be found the best means of polishing intricate cutting, to bring out the dazzling brilliance of the facets.

## EDINBURGH CRYSTAL

To the critical and discerning a fine piece of Edinburgh crystal is a thoroughly satisfying acquisition. The collector's mania for the merely ancient and curious is sometimes rather difficult to understand; but what could be more reasonable, more patriotic, more natural, than to delight in the fine product of modern British industry? Even those who have not, perhaps, hitherto been critical, or even interested, may find in the beauty of Edinburgh crystal a new source of continual joy. No other glass so delightfully adorns its functions: refreshment positively tastes nicer in Edinburgh crystal glass.

THE EDINBURGH & LEITH
FLINT GLASS WORKS
NORTON PARK
EDINBURGH

*Refreshment positively tastes nicer*

*Printed in Scotland*
*at The Riverside Press*
*Edinburgh*

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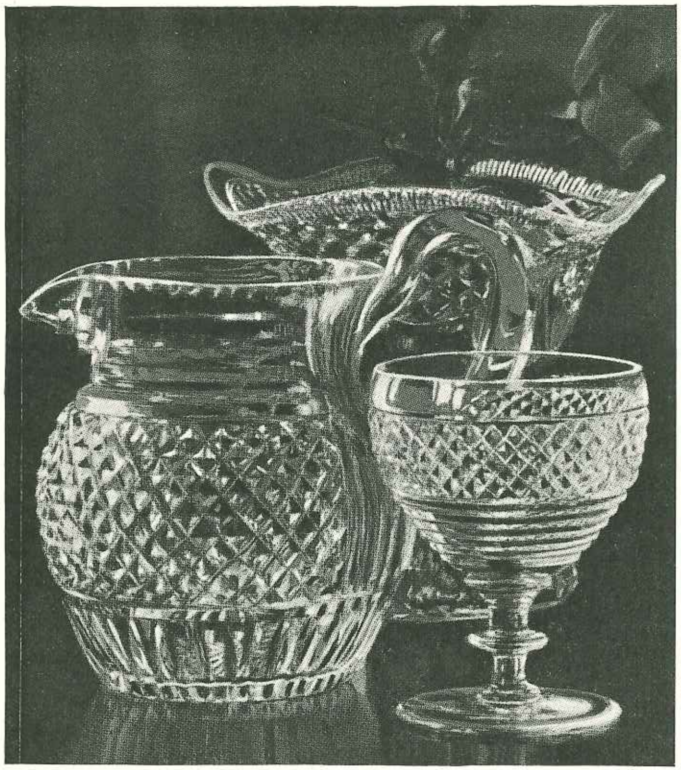

*A group of hand-made crystal pieces, illustrating how faithful our designs are to the antique standards of beauty*

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# THE
# EDINBURGH & LEITH FLINT GLASS WORKS

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